

## Patent claims

1. An implant (5) which can be fitted in an  
5 implantation site in a hole (4) formed in a jaw  
bone (1) where it is exposed to an impinging force  
or impinging forces (F1, F2), and which comprises  
one or more peripherally extending surfaces which  
are arranged at its upper/outer portion and which  
10 can be placed against a jaw bone part at the  
outlet opening (4b) of the hole, characterized in  
that each surface is provided with a pattern (8)  
of grooves (10) and/or recesses, and in that a  
considerable number, for example 20% or more, of  
15 the grooves and/or recesses are designed so that,  
in the implantation site, they extend  
substantially at right angles to, and if  
appropriate parallel to, said forces when these  
assume principal directions differing from the  
20 longitudinal direction (5c) of the implant.
2. The implant as claimed in patent claim 1,  
characterized in that the grooves (10) and/or  
recesses are closed, i.e. have no connection to  
25 the upper and/or lower parts (9d, 9e) of the  
portion, and thus prevent passage of bacteria  
and/or organisms (13) from the upper parts to the  
lower or inner parts of the implant.
- 30 3. The implant as claimed in patent claim 1 or 2,  
characterized in that the grooves (10) and/or  
recesses have a depth (D) which lies in the range  
of 50 - 100  $\mu\text{m}$ , and is preferably ca. 70  $\mu\text{m}$ , in  
order in this way to stimulate growth of bone or  
35 osteoconduction.
4. The implant as claimed in patent claim 1, 2 or 3,  
characterized in that the grooves and/or recesses  
have a width (B) in the range of 100 - 150  $\mu\text{m}$ ,

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preferably ca. 110  $\mu$ m.

- 5 5. The implant as claimed in patent claim 1, 2, 3 or 4, characterized in that the upper/outer portion has an inner socket (20) which is polygonal, toothed or with two or more wings, and the grooves and/or the recesses are arranged at parts (17b, 17c) of greater material thickness at the upper/outer portion.
- 10 6. The implant as claimed in any of the preceding patent claims, characterized in that the pattern comprises straight and parallel groove parts (16a, 16a') with at least two directions of inclination and are arranged round all or part of the peripheral surface, and in that the groove parts extend 10 - 45° in relation to a cross section through the surface.
- 15 7. The implant as claimed in any of patent claims 1 - 5, characterized in that the pattern comprises sinusoidal groove and/or recess parts (18b, 18c, 18d).
- 20 8. The implant as claimed in any of patent claims 1 - 5, characterized in that the pattern comprises one or more groups of grooves (18d) arranged mutually parallel and with different longitudinal extents.
- 25 9. The implant as claimed in any of the preceding patent claims, characterized in that the peripherally extending surfaces (14a) are formed on a flange arrangement.
- 30 10. The implant as claimed in any of the preceding patent claims, characterized in that the principal direction of the impinging force or forces (F3) is for the most part oblique in relation to the longitudinal direction (5c') of the fitted
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implant, because the implant assumes an inclined position in the hole formed in the jaw bone.

- 5 11. The implant as claimed in any of patent claims 1 - 10, characterized in that the principal direction of the impinging force or forces (F1, F2) is for the most part oblique in relation to the fitted implant, because of the oblique settings of impinging force or forces in the implantation environment (cf. chewing movements):
- 10 12. The implant as claimed in any of the preceding patent claims, characterized in that its groove or recess pattern is unique for a first implant design which differs in respect of this pattern from a second implant design.
- 15 13. The implant as claimed in any of the preceding patent claims, characterized in that the implant is exposed to forces (F4) with mutually different directions, and in that a first part or parts of the groove and/or recess pattern (16a) is/are substantially at right angles in relation to a first force direction and in that a second part or parts of the pattern is/are substantially at right angles in relation to a second force direction and, if appropriate, so on, if a further force direction or force directions is/are present.
- 20 25 14. The implant as claimed in patent claim 9, characterized in that said flange arrangement (17) is cylindrical.
- 30 15. The implant as claimed in patent claim 9, characterized in that said flange arrangement (22) is conical.
- 35 16. The implant as claimed in patent claim 9, characterized in that said flange arrangement (21)

is scalloped.